

**Nevada Division of Environmental Protection
Chemical Accident Prevention Program
Element Audit Checklist**



Revision 1: January 26, 2005

Facility:	Process(es) Covered:	Date:	
II. PROCESS SAFETY INFORMATION (PSI)			
A. PROCEDURE/POLICY REVIEW			
1) EXISTENCE, COMPLETENESS OF PSI	NAC Ref.	Resp. Code	
i. Does the PSI appear to be complete for the covered process (i.e., the following Sections 2 through 6 are satisfied)?	459.95412		
ii. Is all of the PSI located on site and available to employees (in addition to items 2 through 6, refer to Part B, On-Site Inspection)?	459.95412		
Notes/Comments Pertaining to Responses to Questions under Issue 1):			
2) INFORMATION PERTAINING TO HAZARDS OF SUBSTANCES	NAC Ref.	Resp. Code	
i. Are material safety data sheets (MSDS) or other substance hazard information on site for all highly hazardous substances and explosives?	459.95412(2a)		
ii. Does the hazard information include all relevant hazard information (refer to MSDS Summary Form)?	459.95412(2a)		
Notes/Comments Pertaining to Responses to Questions under Issue 2):			
3) INFORMATION PERTAINING TO THE TECHNOLOGY OF THE PROCESS	NAC Ref.	Resp. Code	
i. Has a block flow or simplified Process Flow Diagram been developed?	459.95412(2b1)		
ii. Does a Process Chemistry description exist for current process?	459.95412(2b2)		
iii. Does Process Chemistry describe chemical reactions for primary & secondary reactions?	459.95412(2b2)		
iv. Does Process Chemistry describe the type and nature of catalysts used?	459.95412(2b2)		



v.	Does Process Chemistry describe competing side reactions?	459.95412(2b2)	
vi.	Does Process Chemistry describe undesirable chemical reactions such as decompositions and autopolymerizations?	459.95412(2b2)	
vii.	Is the maximum intended onsite inventory defined?	459.95412(2b3)	
viii.	Are Safe Limits for process Pressure(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
ix.	Have the Consequences of Deviating outside the Pressure limits been evaluated?	459.95412(2b5)	
x.	Are Safe Limits for process Temperature(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xi.	Have the Consequences of Deviating outside the Temperature limits been evaluated?	459.95412(2b5)	
xii.	Are Safe Limits for process Flow(s), along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xiii.	Have the Consequences of Deviating outside the Flow limits been evaluated?	459.95412(2b5)	
xiv.	Are Stream Composition Limits, along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xv.	Have the Consequences of Deviating outside the Composition Limits been evaluated?	459.95412(2b5)	
xvi.	Are minimum pipe and vessel wall thickness, along with the basis, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xvii.	Are rotating equipment tolerances, such as vibration limits, defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xviii.	Are other process or mechanical limits defined and consistent with design criteria defined in section 4?	459.95412(2b4)	
xix.	Have the Consequences of Deviating outside the limits established under xvi through xviii been evaluated?	459.95412(2b5)	
Notes/Comments Pertaining to Responses to Questions under Issue 3):			
4) INFORMATION RELATED TO THE EQUIPMENT OF THE PROCESS		NAC Ref.	Resp. Code
i.	Have comprehensive equipment and piping lists been developed, or if a piping list has not been developed, is the piping specification clearly noted for each line on the P&ID?	459.95412(2c1)	
ii.	Have equipment & piping materials been evaluated for compatibility with process fluids?	459.95412(3&4)	
iii.	Have design parameters (e.g., temperature, pressure, etc.) been defined for equipment and piping; and is the equipment and piping capable of handling the maximum and minimum process conditions?	459.95412(3&4)	



iv. Have comprehensive instrument lists been developed?	459.95412(2c1)	
v. Have instruments been evaluated for compatibility with process fluids?	459.95412(3&4)	
vi. Have design parameters (e.g., temperature, pressure, etc.) been defined for instruments, and are instruments capable of handling the maximum and minimum process conditions?	459.95412(3&4)	
vii. Do Piping & Instrument Diagrams (P&IDs) cover the entire regulated process, including process auxiliary systems and utilities?	459.95412(2c2)	
viii. Do P&IDs contain all process equipment and piping?	459.95412(2c2)	
ix. Do P&IDs contain all instrumentation?	459.95412(2c2)	
x. Is control logic readily evident from the P&ID, or if not, is control logic documented in a separate format such as ladder logic diagrams, wiring schematics, SAFE charts?	459.95412(2c2)	
xi. Has P&ID and control logic accuracy been confirmed by the facility?	459.95412(2c2)	
xii. Have Electrically Hazardous Areas, defined pursuant to Article 500 of the National Electric Code, been defined?	459.95412(2c3)	
xiii. Have all electrical components & equipment within defined Electrically Hazardous Areas been evaluated for compatibility with the electrical classification, and found to be compatible?	459.95412(3&4)	
xiv. Have control rooms and other buildings within Electrically Hazardous Areas been evaluated for compatibility with the electrical classification and found to be compatible?	459.95412(3&4)	
xv. Have all Pressure Relief Devices been listed with the following information from the actual valve: set pressure and capacity @ defined overpressure (taken from valve nameplate or from vendor data traceable to the valve)?	459.95412(2c4)	
xvi. Have required relief pressures, rates and sizing basis (e.g., process upset, fire or thermal relief) been determined for each corresponding Pressure Relief Device listed in xv above?	459.95412(3&4)	
xvii. Have actual Pressure Relief Device pressure settings and capacities been determined to be adequate?	459.95412(3&4)	
xviii. Has process been evaluated to determine if additional Pressure Relief Devices are required?	459.95412(3&4)	
xix. Has the capacity of pressure relief headers and associated flares or scrubbers been evaluated for adequacy, and has the capacity been determined to be adequate?	459.95412(3&4)	
xx. For regulated processes enclosed by a building, has the capacity of the mechanical Ventilation Systems been determined?	459.95412(2c5)	
xxi. Has the required capacity of the building Ventilation System, as required by the Uniform Fire Code, or other relevant and more conservative codes, been evaluated?	459.95412(3&4)	
xxii. Is there documentation verifying that the building Ventilation System configuration and capacity are adequate?	459.95412(3&4)	
xxiii. If building Ventilation System includes a scrubber for toxic or highly toxic compressed gases, does it meet requirements of Uniform Fire Code, Article 80 (section 8003.3.1.3.5)?	459.95412(3&4)	
xxiv. Does the building Ventilation System meet Uniform Fire Code requirements?	459.95412(3&4)	
xxv. Do Heat & Material Balances exist for the regulated process (not mandatory if the process was built before May 26, 1992)?	459.95412(2c7)	
xxvi. Do Heat & Material Balances show, at a minimum: stream pressure, temperature, composition (incl. minor concentrations of toxics and corrosives), physical properties (e.g., as molecular wt., density, viscosity, etc.), and thermodynamic properties?	459.95412(2c7)	



Notes/Comments Pertaining to Responses to Questions under Issue 4):		
5) DESCRIPTION OF SAFETY SYSTEMS AND THEIR FUNCTIONS	NAC Ref.	Resp. Code
i. Has a Safety System Description, SSD, been developed and does it include the applicable systems noted in questions 1 through 11 below?	459.95412(2c8)	
1. If process is covered by an Emergency Shut-Down System, is it discussed in the SSD?	459.95412(2c8)	
2. If the process area has Toxic Gas Sensors, are they discussed in the SSD?	459.95412(2c8)	
3. If the process area has Combustible Gas Sensors, are they discussed in the SSD?	459.95412(2c8)	
4. If the process area has Flame Detectors, are they discussed in the SSD?	459.95412(2c8)	
5. If the process has a Firewater System, is it discussed in the SSD?	459.95412(2c8)	
6. If the process has an Emergency Generator, is it discussed in the SSD?	459.95412(2c8)	
7. If the process has an Uninterruptible Power Supply, UPS, is it discussed in the SSD?	459.95412(2c8)	
8. If the process has a Flare System, Incinerator or Vent Scrubber, is it discussed in the SSD?	459.95412(2c8)	
9. If there are audible or visual Alarms, are they discussed in the SSD?	459.95412(2c8)	
10. If the process has an associated building Ventilation System, is it discussed in the SSD?	459.95412(2c8)	
11. Are there other safety systems (list below)? If so, are they discussed in the SSD?	459.95412(2c8)	
ii. Does SSD appear to be complete based on review of Process Flow Diagram, P&ID and on-site inspection? <i>refer to Part B3</i>	459.95412(2c8)	
Notes/Comments Pertaining to Responses to Questions under Issue 5):		



6) EVALUATION OF CODE APPLICABILITY AND COMPLIANCE	NAC Ref.	Resp. Code
i. Have all applicable codes and specifications been defined by the facility (refer to PSI data forms)?	459.95412(2c6)	
ii. Has code compliance been evaluated by the facility (refer to PSI data forms)?	459.95412(3&4)	
iii. Have code deficiencies been corrected?	459.95412(3&4)	
Notes/Comments Pertaining to Responses to Questions under Issue 6):		
7) FIELD VERIFICATION OF PSI	NAC Ref.	Resp. Code
i. Is PSI available to employees? <i>refer to Part B1</i>	459.95412	
ii. Do representative P&IDs appear to be accurate? <i>refer to Part B2</i>	459.95412	
iii. Do electrical components appear to comply with area classification and do the safety system description and PFD appear accurate? <i>refer to Part B3</i>	459.95412	
Notes/Comments Pertaining to Responses to Questions under Issue 6):		
8) IMPLEMENTATION PLAN AND DOCUMENT CONTROL	NAC Ref.	Resp. Code
i. Is there a site-specific plan that addresses how the PSI requirements will be developed and maintained?	459.95516(2)	
ii. Is there a site-specific policy or procedure that addresses how PSI documentation is controlled to ensure that the most current information is in circulation and use?	459.95516(2)	



Notes/Comments Pertaining to Responses to Questions under Issue 8):

General Records Audit/Review Notes/Comments:



B. ON-SITE INSPECTION - RECORDS AUDIT				
1) VERIFY THAT PSI IS ONSITE, ACCESSIBLE AND CURRENT				Resp. Code
a. Are MSDS sheets or hazardous substance information on site and available to employees?				
b. Are block flow or process flow diagrams, and process chemistry available to employees?				
c. Are P&IDs available to employees?				
d. Are piping, equipment and instrument specifications available to employees that must use them?				
e. Is electrical hazardous area classification information available to employees that must use the information?				
Notes/Comments Pertaining to Responses to Questions under Issue 1): 				
2) SELECT AT LEAST ONE P&ID FOR FIELD VERIFICATION LIST SELECTED P&ID(s) ON THE FOLLOWING TABLE:				
#	P&ID NUMBER	DRAWING TITLE	Revision	Revision Date
i				
ii				
iii				
iv				
Inquiry/Observation			Resp. Code :	
(Highlight items on P&ID as they are verified in field)			i	ii
			iii	iv
a. Do the piping and piping components match the drawing?				
b. Does a spot check of flanges, fittings and valves indicate conformance to piping specifications?				
c. Do the pressure vessels, pumps, compressors, heat exchangers and other equipment match the drawing?				
d. Does spot check of pressure vessels, pumps, compressors, heat exchangers and other equipment indicate conformance to equipment specifications?				
e. Do instruments match the drawing?				



Notes/Comments Pertaining to Responses to Questions under Issue 2):

3) VERIFY OTHER PSI INFORMATION

**Resp.
Code**

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| a. From a spot check of electrical components (such as motors, enclosures and instruments) in electrically hazardous locations, does it appear that the components comply with the location? | |
| b. From a field review of the systems in the Safety System Description, does the description appear accurate and complete? | |
| c. From the field review, does the PFD appear accurate? | |

Notes/Comments Pertaining to Responses to Questions under Issue 3):

General On-Site Inspection Notes/Comments: